

**PCT**WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

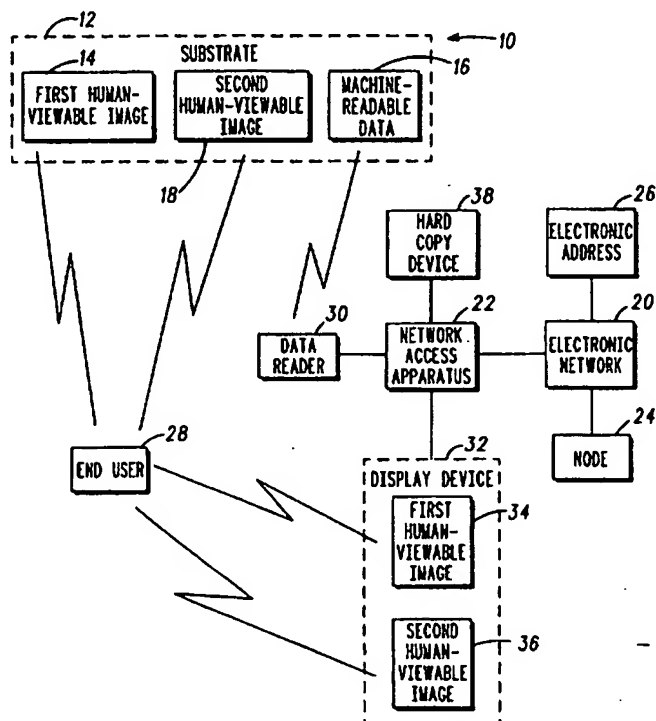
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>6</sup> : <b>G06F 15/00, H04N 7/13</b>		A1	(11) International Publication Number: <b>WO 98/14887</b>
			(43) International Publication Date: 9 April 1998 (09.04.98)
(21) International Application Number: PCT/US97/16874		(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).	
(22) International Filing Date: 23 September 1997 (23.09.97)			
(30) Priority Data: 08/726,004 4 October 1996 (04.10.96) US			
(71) Applicant (for all designated States except US): MOTOROLA INC. [US/US]; 1303 East Algonquin Road, Schaumburg, IL 60196 (US).			
(72) Inventors; and			
(75) Inventors/Applicants (for US only): REBER, William, L. [US/US]; 1029 Buccaneer Road #6, Schaumburg, IL 60916 (US). PERTTUNEN, Cary, D. [US/US]; 11764 Raintree Court, Shelby Township, MI 48315 (US).			
(74) Agents: TOLER, Jeffrey, G. et al.; Motorola Inc., Intellectual Property Dept., 1303 East Algonquin Road, Schaumburg, IL 60196 (US).			
		Published With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.	

(54) Title: METHODS AND SYSTEMS FOR PROVIDING A RESOURCE IN AN ELECTRONIC NETWORK

## (57) Abstract

A method of providing a resource in an electronic network (20) which includes receiving a signal associated with machine-readable data (16) read from a network navigation device (10). The network navigation device (10) has a human-viewable image (14). The method further includes identifying the resource based upon the signal, and communicating content of the resource. The method can be performed by a node (24) of the electronic network (20).



**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NI	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LJ	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

0                   METHODS AND SYSTEMS FOR PROVIDING A  
                    RESOURCE IN AN ELECTRONIC NETWORK

                    Field of the Invention

5           The present invention relates to methods and  
          systems for providing a resource in an electronic  
          network.

                    Background of the Invention

10           The introductory chapter of Discover the World Wide  
          Web with Your Sportster, Second Edition, provides a  
          commentary on the present state of the Internet and the  
          World Wide Web. In this reference, it is stated that  
15           the Internet is in need of an application which will  
          transform the "much-hyped but difficult-to-use linking  
          of computers around the world to being a highly  
          informative, highly usable database and communications  
          tool." It is further stated that the various available  
20           Web browsers (e.g. Mosaic and Netscape Navigator) all  
          have difficulties and limitations which make them  
          insufficient to handle the complexity of the Internet.

          Part of the problem is in the complexity of  
          addressing a resource on the World Wide Web. The World  
25           Wide Web uses an addressing system known as a URL  
          (Uniform Resource Locator) that defines the location of  
          a resource on the Internet. URLs are comprised of up to  
          four parts: a protocol, a domain name, a path, and a  
          filename. The combination of these four parts can  
30           produce a complex address for a resource. For example,  
          the address for information on two-way pagers on the  
          Motorola home page is:  
          http://www.mot.com/MIMS/MSPG/Products

0 /Two-way/tango/desc.html.

Another part of the problem is in the rapid increase of the number of entities and the number of resources on the World Wide Web. Many entities are finding that domain names which they desire are already reserved. As a result, some entities have to purchase their desired domain name from another holder, or have to reserve a less than desirable domain name. Further, as the number of resources increases, newly-formed URLs become less intuitive and greater in length.

10 Resolving the problem of address complexity becomes even more important as various companies propose Internet navigation systems for the masses. Accordingly, there is a need for an improved method and system for providing a resource in an electronic network.

#### Brief Description of the Drawings

20 The invention is pointed out with particularity in the appended claims. However, other features of the invention will become more apparent and the invention may be best understood by referring to the following detailed description in conjunction with the accompanying drawings in which:

25 FIG. 1 is a block diagram of an embodiment of a network navigation device in accordance with the present invention;

FIG. 2 is an illustration of a first embodiment of a network navigation device in accordance with the present invention;

30

5        FIG. 3 is an illustration of an example display on a display device upon receiving a resource using the network navigation device of FIG. 2;

      FIG. 4 is an illustration of a second embodiment of a network navigation device in accordance with the  
10 present invention;

      FIG. 5 illustrates a third embodiment of a network navigation device in accordance with the present invention;

      FIG. 6 illustrates a fourth embodiment of a network  
15 navigation device in accordance with the present invention;

      FIG. 7 illustrates a fifth embodiment of a network navigation device in accordance with the present invention;

20        FIG. 8 illustrates an example of a network access apparatus and examples of various data readers for reading machine-readable data from a network navigation device;

      FIG. 9 is a flow chart of an embodiment of a method  
25 of linking to an electronic address in an electronic network;

      FIG. 10 is a flow chart of a method of providing a resource to an end user in an electronic network;

      FIG. 11 is a block diagram of an embodiment of a  
30 node for providing a resource to an end user in an electronic network;

      FIG. 12 is an illustration of a sixth embodiment of a network navigation device in accordance with the present invention; and

5           FIG. 13 is an illustration of the sixth embodiment  
in a folded state.

#### Detailed Description of the Preferred Embodiments

10           Embodiments of the present invention advantageously  
provide methods and systems for automatically linking a  
user to a resource in an electronic network using a  
network navigation device. The device includes a human-  
viewable image intuitively associated with the resource  
15           and machine-readable data for navigating to the  
electronic address. A user accesses the resource by  
reading the machine-readable data using a data reader  
rather than by typing an electronic address. As a  
result, the addressing format and the address itself  
20           become more transparent to the user. Consequently, the  
problem of address complexity is addressed and the  
criticality of reserving desired domain names is  
reduced.

          The device is well-suited for utilization by the  
25           masses to navigate to desired locations on the Internet  
and the World Wide Web. Additionally, a usage parameter  
associated with the network navigation device can be  
monitored so that a predetermined measure of use is  
provided. Consequently, embodiments of the present  
30           invention are well suited for limited, prepaid use.

          FIG. 1 is a block diagram of an embodiment of a  
network navigation device 10 in accordance with the  
present invention. The network navigation device 10  
comprises a substrate 12, a first human-viewable image  
35           14 supported by the substrate 12, and machine-readable

5 data 16 supported by the substrate 12. Optionally, the network navigation device further comprises a second human-viewable image 18 supported by the substrate 12.

The first human-viewable image 14 is indicative of a resource in an electronic network 20. The second  
10 human-viewable image 18 is indicative of a service which provides the resource to a network access apparatus 22 via the electronic network 20. The machine-readable data 16 provides data which identifies the resource to the service.

15 The service which provides the resource to an end user 28 is provided by a node 24 in the electronic network 20. In general, the resource can be locally present at the node 24 or can be at another electronic address 26 in the electronic network 20. Further, the  
20 node 24 can include a mirror server to provide resources found elsewhere on the electronic network 20.

Although embodiments of the present invention can be advantageously utilized for any electronic network having an electronic addressing scheme for identifying  
25 servers and information contained therein, of particular interest are embodiments of the present invention where the electronic network 20 includes the Internet, the World Wide Web, or an intranet. In this case, the machine-readable data 16 can include at least a portion  
30 of a URL or an IP (Internet Protocol) address to identify the resource. Alternatively, the machine-readable data 16 can include a code from which the node 24 identifies the resource.

Preferably, the substrate 12 is formed by a  
35 substantially flat piece of material. Examples of

5 materials which can be utilized to form the substrate 12  
include, but are not limited to, dielectric materials  
such as paper, cardboard, and plastic, and substantially  
nonmagnetic materials. Preferably, the material and its  
thickness are selected so that the substrate 12 is  
10 stiff, yet flexible. It is noted that, in general, the  
substrate 12 need not be homogeneous, i.e. more than two  
materials can be utilized to form the substrate 12.

It is also preferred that the substrate 12 be  
shaped and sized to facilitate ease in handling by  
15 individuals, such as the end user 28. For this purpose,  
the substrate 12 can be card-shaped. For example, the  
substrate 12 can have the size of a business card, a  
credit card, an index card, a trading card (e.g. a  
baseball card), or a playing card (e.g. from a deck of  
20 playing cards). In other embodiments, the substrate 12  
includes a page in a book, a magazine, a newspaper, or  
other printed publication. In general, the substrate 12  
can have various shapes, such as rectangular, circular,  
oval, or polygonal shapes, and can have various sizes.

25 It is further noted that the substrate 12 can be  
folded or attached to a page which is folded. As a  
result, the network navigation device 10 can assume two  
profiles: (i) an unfolded profile which provides surface  
areas for supporting all of the machine-readable data  
30 16, the human-viewable images 14 and 18, and additional  
information; and (ii) a smaller, folded profile which  
provides smaller externally-accessible surfaces for  
supporting a subset of the above-described information.

The human-viewable images 14 and 18 can be  
35 supported by the substrate 12 in a variety of ways. In



5 one embodiment, the human-viewable images 14 and 18 are printed directly onto the substrate 12. In another embodiment, the human-viewable images 14 and 18 are printed onto a second substrate for affixing or adhering to a surface of the substrate 12. Here, for example, 10 the second substrate can have an adhesive backing for affixing the human-viewable images 14 and 18 to the substrate 12. As another alternative, the human-viewable images 14 and 18 can be contained (e.g. sandwiched) within the substrate 12.

15 The first human-viewable image 14 can include textual information and/or graphical information which provides an intuitive and/or understandable representation of the resource. As an example, to provide a network navigation device for the Motorola Web 20 page on two-way pagers, the human-viewable image 14 can include textual information such as "Motorola" and/or "Two-Way Pagers", graphical information such as an image or an illustration of a Motorola two-way pager, or a combination of textual information and graphical 25 information. Such a human-viewable image is more intuitive and more understandable to the end user 28 than an electronic address having the form of <http://www.mot.com/MIMS/MSPG/Products/Two-way/tango/desc.html>.

30 The second human-viewable image 18 can include textual information and/or graphical information which indicates to the end user 28 which service is providing the resource. For example, the second human-viewable image 18 can include textual information such as 35 "Brought to you by" and the name of the service,

5 graphical information such as a logo for the service, or  
a combination of textual information and graphical  
information.

Generally, the second human-viewable image 18 can  
indicate any combination of: a client routine (e.g. an  
10 Internet browser routine) which is utilized to display  
the resource, a network provider (e.g. an Internet  
service provider) which connects the network access  
apparatus 22 to the electronic network 20, and a service  
which provides a link to the resource.

15 The machine-readable data 16 can be supported by  
the substrate 12 in a variety of ways. In embodiments  
where the machine-readable data 16 includes printed  
data, the machine-readable data 16 can be printed  
directly onto the substrate 12, printed onto a second  
20 substrate for affixing or adhering to a surface of the  
substrate 12, or can be contained within the substrate  
12. In these embodiments, the printed data can include  
a bar code, such as a one-dimensional or a two-  
dimensional bar code, representative of the navigation  
25 instructions. Examples of one-dimensional bar codes  
include, but are not limited to, 3 of 9, UPC-A, Code  
128, Codabar, MSI, Extended 3 of 9, Code 93, Extended  
Code 93, Industrial 2 of 5, Standard 2 of 5, Code 11,  
and UCC/EAN-128. Examples of two-dimensional bar codes  
30 include, but are not limited to, Data Matrix and PDF417.

Typically, the printed data is not readily  
interpretable or not readily discernible by the end user  
28. For example, although a human may be specially  
trained to mentally decode a bar code, such a code is  
35 practically indiscernible by most humans. Further, the

5 printed data can be either visible or invisible to the end user 28.

In embodiments where the machine-readable data 16 includes magnetically-stored data, the machine-readable data 16 can be: (i) stored directly onto a portion of  
10 the substrate 12 having a magnetic storage medium; (ii) stored onto a magnetic storage medium for affixing to the substrate 12; or (iii) stored onto a magnetic storage medium contained (e.g. sandwiched) within the substrate 12.

15 In embodiments where the machine-readable data 16 includes electronically-stored data, the machine-readable data 16 can be stored in a memory device integrated with the substrate 12. In these embodiments, the electronically-stored data can be externally  
20 accessed via an interface integrated with the network navigation device 10, or via a transmitter integrated with the network navigation device 10.

The machine-readable data 16 is communicated to the network access apparatus 22 by a data reader 30. The  
25 form of the data reader 30 is dependent upon the form of the machine-readable data 16. For printed data, the data reader 30 can include an optical imaging reader such as a scanning wand, a linear CCD (charge coupled device) reader, or a two-dimensional CCD reader. For  
30 magnetically-stored data the data reader 30 can include a magnetic read head, such as those within a magnetic stripe reader. For electronically-stored data, the data reader 30 can include an electronic interface or a receiver.

5           Generally, the machine-readable data 16 can include instructions which directs the network access apparatus 24 to execute any combination of: a predetermined client routine (e.g. a predetermined Internet browser routine), a predetermined network provider access routine (e.g. dialing and login on to a predetermined service provider), and navigation instructions for automatically linking the network access apparatus 22 to the electronic address 26 via the electronic network 20.

10           The network access apparatus 22 can have a variety of forms, including but not limited to, a general purpose computer, a network computer, a network television, an internet television, and a portable wireless device. A display device 32, such as a monitor or a television, is coupled to the network access apparatus 24 to communicate visual content of the resource upon linking to the electronic address 20. To reinforce the intuitive association between the network navigation device 10 and the resource, a first image 34 viewable on the display device 32 upon linking to the resource is similar to (or can be equivalent to) at least a portion of the first human-viewable image 14. To reinforce the intuitive association between the network navigation device 10 and the service which provides the resource, a second image 36 viewable on the display device 32 is similar to (or can be equivalent to) at least a portion of the second human-viewable image 18.

25           The network access apparatus 22 can communicate with a hard copy device 38 to provide a hard copy representation of an experience provided by the network

30           

35

5 navigation device 10. The hard copy device 38 can have a variety of forms, including but not limited to, a printer, a laser printer, an ink jet printer, a thermal printer, and a plotter.

10 The hard copy representation allows the end user 28 to retrace his/her experience or navigation session initiated by the network navigation device 10. The hard copy representation can include at least a portion of the content from one or more resources accessed during the experience. Here, for example, the hard copy  
15 representation can include a plurality of images in a gallery form which summarize the experience. Alternatively, or in addition thereto, the hard copy representation can include a map which summarizes the electronic addresses visited during the experience.

20 If desired, the hard copy device 38 can print the hard copy representation onto the substrate 12, or onto another substrate which can be attached to the substrate 12. As a result, a souvenir of the navigation session is physically linked to the network navigation device 10  
25 which initiated the navigation session.

FIG. 2 and FIGS. 4 to 7 illustrate various examples of embodiments of the network navigation device 10. It is noted that the teachings herein can be interchanged and combined among the various examples to form  
30 additional embodiments.

FIG. 2 is an illustration of a first embodiment of a network navigation device in accordance with the present invention. The network navigation device includes a substrate 40 which supports a first human-

5 viewable image 42, a second human-viewable image 44, and machine-readable data 46.

The first human-viewable image 42 includes information which indicates to an end user that the network navigation device can be utilized to link to a  
10 resource from or about Motorola, Inc. For this purpose, included in the human-viewable image 42 are textual information such as "Motorola" and the "What you never thought possible" trademark, and graphical information such as the Motorola logo 48.

15 The second human-viewable image 44 includes a logo which identifies a service which provides the resource to the end user. In this embodiment, the logo identifies a linking service provided at a node (such as the node 24 in FIG. 1) on the World Wide Web.

20 The machine-readable data 46 includes a bar code representation of a first URL for the node which provides the linking service (in particular, <http://link.node/>), and a second URL for the Motorola home page on the World Wide Web (in particular, <http://mot.com>). It is noted that the URL of <http://link.node/> is a fictitious URL, and is utilized  
25 for purposes of illustration only.

The first URL provides a navigation instruction for automatically linking the network access apparatus 22 to  
30 the node 24 via the electronic network 20. The second URL is utilized to link the node 24 to the Motorola home page (for example, at the electronic address 26) via the electronic network 20. The node 24 receives content from the Motorola home page upon linking thereto. The

5 content is transferred from the node 24 to the network access apparatus 22 via the electronic network 20.

Optionally, the content delivered to the network access apparatus 22 can be modified at the node 24 to include an image corresponding to at least a portion of  
10 the second human-viewable image 44. Here, for example, the content can be modified to include an image of the logo for the linking service.

In the embodiment illustrated in FIG. 2, the substrate 40 has the size of a business card (3.5 inches  
15 by 2 inches). Preferably, the substrate 40 is formed entirely of a dielectric and/or nonmagnetic material such as paper, cardboard, or plastic. These materials are advantageous for producing a network navigation device which is inexpensive, and hence, can be disposed  
20 after use.

The human-viewable images 42 and 44 and the machine-readable data 46 can be printed directly onto the substrate 40. Alternatively, the human-viewable images 42 and 44 and the machine-readable data 46 can be  
25 printed onto a second substrate, which is thereafter affixed to the substrate 40.

FIG. 3 is an illustration of an example display on the display device 32 upon receiving the resource using the network navigation device of FIG. 2. The display  
30 includes content 50 from the resource, which includes an image 51 corresponding to the first human-viewable image 42. The display further includes content 52 added by the linking service. The content 52 includes an image 53 corresponding to the second human-viewable image 44.

5           FIG. 4 is an illustration of a second embodiment of  
a network navigation device in accordance with the  
present invention. The network navigation device  
includes a substrate 54 which can be similarly sized and  
shaped, and formed of a similar material as the  
10 substrate 40 in FIG. 2. The substrate 54 supports  
machine-readable data 56 which provides a bar code  
representation of an IP address for the node providing a  
linking service node (in particular, a fictitious IP  
address of 256.256.256.256) and an IP address of the  
15 Discovery Channel's home page on the World Wide Web (in  
particular, 204.132.253.102).

The substrate 54 supports a first human-viewable  
image 58 which intuitively conveys to a user that the  
network navigation device is for linking to Discovery  
20 Channel Online. To reinforce the association between  
the network navigation device and the resource, the  
first human-viewable image 58 corresponds to an image  
which is viewable in the content of the Discovery  
Channel home page.

25           The substrate 54 also supports a second human-  
viewable image 59 which indicates the linking service  
which links the end user to the resource. As in the  
embodiment of FIG. 2, the second human-viewable image 59  
includes a logo for the linking service.

30           The use of a printed image and printed data on a  
paper or cardboard substrate, such as in FIGS. 2 and 4,  
provides a number of advantages. A first advantage is  
that the resulting network navigation device can be  
produced inexpensively for wide distribution. For  
35 example, these network navigation devices can be: (i)



5 included as inserts in magazines, newspapers, or other  
publications; (ii) stacked into decks and packaged for  
distribution by mail or for marketing in stores; and/or  
(iii) distributed as one distributes business cards. A  
second advantage is that a user can rapidly thumb  
10 through a number of network navigation devices to find  
network resources of interest by viewing the image on  
each network navigation device. In addition, the  
network navigation devices can be collected and traded  
in a manner similar to trading cards.

15 In addition, the use of a printed image and printed  
data allows for network navigation devices to be formed  
on pages of a book, magazine, newspaper, or other  
publication. In general, each page can define a single  
network navigation device, or can define a plurality of  
20 network navigation devices. If desired, a page defining  
a plurality of network navigation devices can be  
perforated to allow for separation into individual  
network navigation devices.

In one application, the printed image can include a  
25 figure in a book or the like. Here, the printed data  
may be utilized to link a user to a resource having  
information associated with the figure. If desired, the  
printed data can be included in a caption for the  
figure. In another application, a plurality of pages of  
30 network navigation devices are assembled to form a  
directory of resources in an electronic network.

Although the embodiments of FIGS. 2 and 4  
illustrate a single printed code on the network  
navigation device, it is noted that separate printed

5 codes can be utilized for each of the various types of information stored on a network navigation device.

FIG. 5 illustrates a third embodiment of a network navigation device in accordance with the present invention. The network navigation device includes a  
10 PCMCIA memory card 60 having stored therein machine-readable data representative of navigation instructions for linking to a resource. The PCMCIA memory card 60 has a PCMCIA interface 62 for communicating the machine-readable data to a data reader with a mating PCMCIA  
15 interface.

The PCMCIA memory card 60 supports a first externally-viewable image 64 and a second externally-viewable image 66 at an exterior surface 68. Hence, the substrate 12 as described earlier includes a portion of  
20 the housing of the PCMCIA memory card 60.

In this example, the first externally-viewable image 64 includes an image of a Tango™ two-way pager available from Motorola. The second externally-viewable image 66 includes a logo of a service provider, such as  
25 an internet service provider, through which access to the electronic network 20 is provided.

Machine-readable data in memory card 60 includes instructions for connecting to the internet service provider. The instructions for connecting can include,  
30 for example, a telecommunication number (such as a phone number) which is to be dialed to access the internet service provider. The machine-readable data can further include a code, such as a password, for authentication by the internet service provider. Based upon the code,  
35 access to the resource is either allowed, limited, or

5 inhibited. Further, the code can be utilized by the internet service provider to uniquely identify the network navigation device.

In addition, the machine-readable data includes a representation of the URL for information on the Tango two-way pager on the World Wide Web, which is  
10 <http://www.mot.com/MIMS/MSPG/Products/Two-way/tango/>. The internet service provider utilizes the URL to link the end user 28 to the resource to receive information on the Tango™ two-way pager.

15 FIG. 6 illustrates a fourth embodiment of a network navigation device in accordance with the present invention. The network navigation device includes a substrate 70 which supports a magnetic storage medium 72. In the example of FIG. 6, the magnetic storage  
20 medium 72 has the form of a magnetic stripe, although alternative forms can be utilized. The magnetic storage medium 72 stores machine-readable data providing navigation instructions for linking to a resource. The machine-readable data is communicated to a data reader  
25 having a magnetic reading head, such as a magnetic stripe reader.

The substrate 70 supports a human-viewable image 74 indicative of a resource for Motorola's BitSURFR™ modems. Accordingly, the magnetic storage medium 72 can  
30 store a representation of the URL for obtaining information on Motorola's BitSURFR™ modems, which is [http://www.mot.com/MIMS/ISG/Products/bitsurfr\\_pro/](http://www.mot.com/MIMS/ISG/Products/bitsurfr_pro/).

In the embodiment illustrated in FIG. 6, the substrate 70 has the size of a credit card (3.375 inches  
35 by 2.25 inches). Preferably, the substrate 70 is formed

5 entirely of a dielectric and/or nonmagnetic material  
such as paper, cardboard, or plastic. Here, the only  
magnetic material in the network navigation device is  
within the magnetic storage medium 72.

FIG. 7 illustrates a fifth embodiment of a network  
10 navigation device in accordance with the present  
invention. The network navigation device includes a  
radio frequency tag 80 containing navigation  
instructions for accessing a resource. The radio  
frequency tag 80 includes a memory containing data  
15 representative of the navigation instructions, and a  
transmitter which transmits a signal representative of  
the data for external reception. The memory can be  
either read-only or read-write. In general, the radio  
frequency tag 80 can be either active (i.e. having an  
20 internal battery for powering its circuits) or passive  
(i.e. powering its circuits using externally-generated  
power).

Various commercially-available radio frequency tags  
can be utilized for the radio frequency tag 80,  
25 including but not limited to, tags produced by Indala  
Corporation and the MicroStamp RIC (Remote Intelligent  
Communication) tags available from Micron  
Communications, Inc. Illustrated in FIG. 7 is a network  
navigation device based on the MicroStamp RIC unit,  
30 which is postage-stamp sized (1.25 inches by 1.25  
inches).

A human-viewable image 82 is supported by an  
exterior surface of the radio frequency tag 80. Hence,  
the substrate as described earlier includes a portion of  
35 the housing of the radio frequency tag 80. In this

5 example, the human-viewable image 82 includes the  
Motorola logo, which indicates that the navigation  
instructions will link a user a resource which provides  
information about Motorola, Inc.

10 In this embodiment, the machine-readable data  
includes an electronic address for linking to a node  
(such as the node 24 in FIG. 1), and a code which  
identifies the resource to the node. The code may be  
used so that the electronic address for the resource is  
concealed from end users. The node converts the code to  
15 an electronic address for the resource, links to the  
electronic address, and communicates a content of the  
resource to the end user 28.

The machine-readable data further includes an  
instruction which initiates the execution of a  
20 predetermined Web browser for displaying the content of  
the resource. A logo for the predetermined Web browser  
is included in a second human-viewable image 84  
supported by the exterior surface of the radio frequency  
tag 80.

25 FIG. 8 illustrates an example of a network access  
apparatus 22 and examples of various data readers for  
reading machine-readable data from a network navigation  
device. In this example, the network access apparatus  
includes a personal computer 90 having an input  
30 interface, such as a keyboard 92, and a display device,  
such as a monitor 94, coupled thereto.

The personal computer 90 communicates with an  
electronic network via a line 96, which can include a  
telephone line, an ISDN line, a cable television line, a  
35 fiber optic line, a computer network line, or the like.

5 Alternatively, the personal computer 90 can wirelessly  
communicate with the electronic network 20. Based on  
the mode of communication with the electronic network  
20, the personal computer 90 can include a modem and/or  
a transceiver to communicate with the electronic network  
10 20. The electronic network 20 can be provided by an  
online service, an Internet service provider, a local  
area network service, a wide area network service, a  
cable television service, a wireless data service, an  
intranet, or the like.

15 The various data readers coupled to the personal  
computer 90 include a bar code reader 98, an RF tag  
reader 100, a PCMCIA card reader 102, and a magnetic  
stripe reader 104. The bar code reader 98 is utilized  
to read bar-coded navigation instructions from a network  
20 navigation device, such as those illustrated in FIGS. 2  
and 4. The RF tag reader 100 is utilized to receive and  
decode an electromagnetic signal representative of the  
navigation instructions generated by an RF tag, such as  
one illustrated in FIG. 6. The PCMCIA card reader 102  
25 interfaces with a PCMCIA card, such as one illustrated  
in FIG. 5, to read navigation instructions stored  
therein. The magnetic stripe reader 104 reads  
magnetically-stored navigation instructions stored by a  
magnetic stripe, such as one illustrated in FIG. 6.

30 It is noted that the bar code reader 98 is  
illustrative of any optical reading device which can be  
utilized. Similarly, the PCMCIA card reader 102 is  
illustrative of any memory card reader which can be  
utilized, and the magnetic stripe reader 104 is

5 illustrative of any magnetic reading device which can be utilized.

FIG. 9 is a flow chart of an embodiment of a method of linking to a resource in an electronic network. The method can be utilized by the network access apparatus  
10 22 in FIG. 1 to automatically link the end user 28 to a resource encoded on the network navigation device 10. Typically, the end user 28 selects a desired resource to visit based upon the first human-viewable image 14 associated therewith on the network navigation device  
15 10.

As indicated by block 110, the method includes a step of reading machine-readable data from a network navigation device. The machine-readable data can be read using the data reader 30. The specific type of  
20 data reader utilized is selected based upon how the machine-readable data 16 is stored on the network navigation device 10.

As indicated by block 112, a step of decoding the machine-readable data 16 is performed to generate  
25 navigation instructions. The navigation instructions tell the network access apparatus 22 how to link to the resource. As described earlier, the navigation instructions can include at least a portion of a URL or at least a portion of an IP address for the resource.  
30 If a partial address is received, an additional step of completing the electronic address can be performed. For example, if an IP address is received, the IP address can be prepended by "http://".

It is noted that a URL can includes up to four  
35 parts: a protocol, a domain name, a path, and a

5 filename. URL protocols include: "file:" for accessing  
a file stored on a local storage medium; "ftp:" for  
accessing a file from an FTP (file transfer protocol)  
server; "http:" for accessing an HTML (hypertext marking  
10 server; "mailto:" for sending an e-mail message; "news:"  
for linking to a Usenet newsgroup; "telnet": for opening  
a telnet session; and "wais:" for accessing a WAIS  
server. Consequently, network navigation devices in  
accordance with the present invention can be utilized  
15 for automatically initiating any of the above tasks.

Optionally, a step of storing the navigation  
instructions is performed as indicated by block 114.  
The navigation instructions can be stored as a bookmark  
or stored in a favorites list, such as those available  
20 in many Web browsers, to provide a shortcut to the  
electronic address. Thereafter, a user can link to the  
resource by selecting the shortcut rather than having to  
re-read the navigation instructions from the network  
navigation device..

25 Preferably, a representation of the first human-  
viewable image 14 is stored to provide an iconic  
representation for the shortcut to the resource. As a  
result, the association between the first human-viewable  
image 14 and the resource is reinforced. Similarly, a  
30 representation of the second human-viewable image 18 can  
be stored for display with the iconic representation.  
This further reinforces the association between the  
second human-viewable image 18 and the service which  
provided the link to the resource.



5           To facilitate storing a representation of the  
human-viewable images 14 and 18, the machine-readable  
data 16 can include machine-readable data representative  
of the human-viewable images 14 and 18, which is read in  
block 110. Alternatively, the human-viewable images 14  
10 and 18 can be optically scanned into the network access  
apparatus 22 using a page scanner or the like. As  
another alternative, an electronic representation of the  
first human-viewable image 14 can be downloaded from the  
resource, and an electronic representation of the second  
15 human-viewable image 18 can be downloaded from the  
service upon linking thereto.

As indicated by block 116, a step of executing a  
predetermined network access routine is performed. The  
step of executing the predetermined network access  
20 routine can include any of: (i) executing a routine to  
connect and/or to logon to a service provider (e.g.  
executing a dial-up routine or a wireless authentication  
routine to connect to a service provider); and (ii)  
executing a client routine for subsequent user  
25 interaction with the electronic address (e.g. executing  
a graphical user interface routine or a Web browsing  
routine).

The step of executing the predetermined network  
access routine can be executed prior to reading the  
30 machine-readable data in block 110. Alternatively, the  
predetermined network access routine can be  
automatically initiated upon reading the machine-  
readable data in block 110. Here, the machine-readable  
data 16 can include instructions for directing the  
35 initiation of the predetermined network access routine,

5 and for directing which predetermined network access routine is to be executed.

In particular, the machine-readable data 16 can include instructions for directing the type and the specifics of the connection to be made to the electronic  
10 network 20. These instructions can dictate whether a wireline connection or a wireless connection should be made, and/or which wireline connection or which wireless connection should be made. As a result, the instructions on one network navigation device may direct  
15 a connection to a first service provider (e.g. America Online) while the instructions on another network navigation device direct a connection to a second service provider (e.g. CompuServe).

Further, the machine-readable data 16 can include  
20 instructions for selecting which client routine is to be executed. As a result, the instructions on one network navigation device may direct that a first graphical user interface routine (e.g. Netscape Navigator) be executed, while the instructions on another network navigation  
25 device direct a that second graphical user interface routine (e.g. Microsoft Internet Explorer) be executed.

As indicated by block 118, the method includes a step of linking to the resource using the navigation instructions. This step typically includes transmitting  
30 the navigation instructions to the electronic network 20 to establish the link to the resource.

As indicated by block 120, the method includes a step of receiving content from a resource once the link is established. The content from the resource can  
35 include audible information and/or visual information,

5 such as graphical information and/or textual  
information. Examples of the content include, but are  
not limited to, any combination of a file from a local  
hard drive, a file from a FTP server, an HTML document,  
content from a Gopher server, a message from a  
10 newsgroup, a transmission from a Telnet session, a  
transmission from a WAIS server, an animation file, a  
movie file, and an audio file.

As indicated by block 122, the method includes a  
step of displaying the content from the resource. As  
15 described earlier, the content can include an image  
which corresponds to at least a portion of the first  
human-viewable image 14 on the network navigation device  
10. Additionally, the content can include an image  
which corresponds to at least a portion of the second  
20 human-viewable image 18.

An article of manufacture can be formed to direct a  
network access apparatus to perform the above-described  
steps. The article of manufacture can include a  
computer-readable storage medium having computer-  
25 readable data stored therein which directs the network  
access apparatus to perform the above-described steps.  
Examples of the computer-readable storage medium  
include, but are not limited to, a logic circuit, a  
memory, a mass storage medium, an optical disk, a CD-  
30 ROM, a magnetic disk, a floppy disk, a hard disk, and a  
PCMCIA card.

FIG. 10 is a flow chart of a method of providing a  
resource to an end user in an electronic network. The  
method can be utilized by the node 24 in FIG. 1 to  
35 provide the resource to the end user 28 who utilizes an

5   embodiment of a network navigation device 10 in  
accordance with the present invention.

As indicated by block 130, the method includes a  
step of receiving a signal associated with machine-  
readable data read from a network navigation device.  
10   Typically, the machine-readable data is read by the end  
user using the data reader 30 shown in FIG. 1. The data  
reader 30 communicates a signal representative of the  
machine-readable data to the network access apparatus  
22, which in turn, communicates a signal associated  
15   therewith to the node 24.

As indicated by block 132, an optional step of  
authenticating the network navigation device is  
performed. The network navigation device 10 is  
authenticated based upon the signal received in block  
20   130. If the network navigation device 10 is  
successfully authenticated, then flow of the method is  
directed to block 134. If the network navigation device  
fails the step of authentication, then flow of the  
method is directed so as not to perform at least one,  
25   and typically all, of the subsequent steps.

As indicated by block 134, a step of identifying a  
resource based upon the signal is performed. The step  
of identifying the resource can include identifying an  
electronic address for the resource encoded in the  
30   signal. As described earlier, the electronic address  
can include at least a portion of a URL or at least a  
portion of an IP address. Alternatively, the step of  
identifying the resource can include identifying the  
resource based upon a code which is encoded in the  
35   signal. As described earlier, the code can be utilized

5 to conceal the electronic address for the resource from the end user.

As indicated by block 136, a step of retrieving the resource is performed. The resource can be retrieved locally from a mass storage device at the node 24, or  
10 externally from another location in the electronic network 20, such as from the electronic address 26.

As indicated by block 140, the method optionally includes a step of modifying the content of the resource. Here, the content of the resource can be  
15 modified to include at least a portion of the second human-viewable image 18. As an example, the content of the resource can be modified to include a logo of a service being provided by the node 24.

As indicated by block 142, a step of communicating the content to the end user 28 is performed. This step  
20 can include communicating an image which corresponds to at least a portion of the first human-viewable image. Optionally, this step can include communicating an image which corresponds to at least a portion of the second  
25 human-viewable image.

As indicated by block 144, an optional step of monitoring a usage parameter associated with the network navigation device is performed. The usage parameter can measure the usage in terms of: (i) units of time (e.g.  
30 minutes or hours); (ii) monetary units (e.g. dollars); or (iii) a number of uses.

As indicated by block 146, the method optionally includes a step of limiting subsequent usage associated with the network navigation device once the usage  
35 parameter attains a predetermined threshold. Here, for

5 example, subsequent usage can be limited if usage associated with the network navigation device reaches: (i) a predetermined time limit; (ii) a predetermined monetary limit; or (iii) a predetermined number of uses limit. Subsequent usage can be limited by either: (i)  
10 inhibiting or prohibiting all subsequent usage associated with the network navigation device; or (ii) allowing limited subsequent usage.

FIG. 11 is a block diagram of an embodiment of a node, such as node 24, for providing a resource to an  
15 end user in an electronic network. The node can be utilized to perform the steps described in conjunction with FIG. 10.

The node includes a server 150 which receives a signal associated with machine-readable data 16 read  
20 from a network navigation device 10. The server 150 receives the signal either from the electronic network 20 or from another communication link.

Based upon the signal, the server 150 is operative to authenticate the network navigation device 10 using a  
25 database 152. The database 152 includes a plurality of records corresponding to a plurality of network navigation devices. Each record includes a code which identifies a respective one of the network navigation devices. The server authenticates the network  
30 navigation device based upon a code encoded in the received signal. For example, authentication can occur if the code in the signal matches a code in the database 152.

Each record can additionally include a resource  
35 location, a usage limit, and a usage parameter. The

5 resource location identifies a location of the resource  
associated with the network navigation device 10. As  
illustrated, the resource location can comprise an  
electronic address, a URL, an IP address, a  
/path/filename portion of a URL, or a name of a resource  
10 on the server. Alternatively, the resource location can  
indicate that no resource is specifically associated  
with the code.

The usage limit specifies a threshold of usage at  
which subsequent usage is limited. As illustrated, the  
15 usage limit can be gauged in terms of a number of uses,  
a time duration of usage, or a monetary measure.  
Alternatively, the usage limit can indicate that an  
unlimited use of the network navigation device is  
permitted.

20 The usage parameter indicates an amount of usage  
associated with the network navigation device. As  
illustrated, the usage parameter can be gauged in terms  
of a number of uses, a time duration of usage, or a  
monetary measure.

25 Upon authenticating the network navigation device  
10, the server 150 identifies the resource to be  
provided to the end user 28 using the resource location  
field in the database 152. The server 150 retrieves the  
resource either from the electronic network 20 or  
30 locally from a plurality of resources 154. The  
plurality of resources 154 can include resources  
available elsewhere in the electronic network 20. Here,  
the server 150 with the plurality of resources 154  
provides a mirror server. In addition, the plurality of

5 resources 154 can include resources not available elsewhere in the electronic network 20.

The plurality of resources 154 can be selected to have content suited for a prespecified audience. For example, a subset of the plurality of resources 154 can  
10 specifically exclude material which is unsuitable for minors. Consequently, a network navigation device can be produced having limited access only to those resources in the plurality of resources 154 which are suitable for its predetermined audience.

15 The server 150 can modify the content of the resource to include a logo or the like which identifies a service provided thereby. Thereafter, the server 150 communicates the content of the resource to the end user 28.

20 As an alternative to retrieving and communicating the content of the resource, it is noted that the server 150 can simply initiate a hyperlink to connect the end user 28 to the resource.

The server 150 monitors a usage associated with the  
25 network navigation device 10 and accordingly updates the usage parameter in the database 152. Once the usage parameter attains the usage limit, the server 150 can limit subsequent usage.

It is noted that the database 152 can also record  
30 an amount of usage for each resource. An accounting report can be generated therewith to summarize the utilization of each resource provided by the node.

An article of manufacture can be formed to direct a node 24 to perform steps for providing a resource to an  
35 end user 28. The article of manufacture can include a



5 computer-readable storage medium having computer-readable data stored therein which directs the network access apparatus 22 to perform the steps described herein.

10 FIG. 12 is an illustration of a sixth embodiment of a network navigation device in accordance with the present invention. The network navigation device includes a thin substrate 160 preferably formed of paper, cardboard, or plastic. The substrate 160 supports any combination of a service provider image  
15 162, a browser routine image 164, a linker service image 166, a resource image 168, and machine-readable data 170. The machine-readable data 170 directs a network access apparatus to initiate a browser routine indicated by the browser routine image 164 to dial a service  
20 provider indicated by the service provider image 162. Thereafter, the machine-readable data 170 directs a linker service indicated by the linker service image 166 to retrieve a resource indicated by the resource image 168.

25 The substrate 160 further supports machine-readable data 172 for linking to other resources indicated by resource images 174. Additionally, the substrate 160 can support supplementary information 176 which describe the resources indicated by resource images 168 and 174.  
30 Further, the substrate 160 can provide space for printing a summary of the navigation session 178 using the hard copy device 38 in FIG. 1.

FIG. 13 is an illustration of the sixth embodiment in a folded state. In the folded state, only a subset  
35 of the above-described images, data, and information are

5 externally accessible. Here, for example, only the service provider image 162, the browser routine image 164, the linker service image 168, and the machine-readable data 170 are externally accessible when the substrate 160 is folded.

10 Thus, there has been described herein several embodiments including preferred embodiments of methods and systems for providing a resource associated with a network navigation device.

Because the various embodiments of the present  
15 invention utilize a device having a human-viewable image which is intuitively associated with a resource at an electronic address and machine-readable data for linking to the electronic address, they provide a significant improvement in that the addressing format and the  
20 address itself may become transparent to the end user. Consequently, the problem of address complexity is addressed by using embodiments of the network navigation device. Further, the criticality of reserving desired domain names is reduced.

25 The intuitive association between the human-viewable image and the electronic address can be reinforced by including at least a portion of the human-viewable image within the content provided by the electronic address. Additionally, the device utilized  
30 in various embodiments of the present invention can include a second human-viewable image associated with a service which provides the resource to the end user. The service can augment the content of the resource to include at least a portion of the second human-viewable  
35 image to reinforce an association with the device.

5           Additionally, the various embodiments of the  
present invention as herein-described monitor a usage  
parameter associated with the network navigation device.  
Consequently, embodiments of the network navigation  
device can be utilized for prepaid, limited-use access  
10 of resources on an electronic network.

          Further, the various embodiments of the present  
invention as herein-described automatically establish a  
connection to an electronic network and automatically  
execute a client routine upon reading the machine-  
15 readable data from the network navigation device. As a  
result, the process of initiating the connection (e.g.  
dialing a service provider and logging on) and executing  
the client routine (e.g. the Web browser) is also  
transparent to the user.

20           Still further, the various embodiments of the  
present invention as herein-described provide network  
navigation devices which can be inexpensively produced  
for wide distribution, are easy to handle for selecting  
electronic addresses of interest, can be collected and  
25 traded like trading cards, and can be disposed or  
discarded after use.

          It will be apparent to those skilled in the art  
that the disclosed invention may be modified in numerous  
ways and may assume many embodiments other than the  
30 preferred form specifically set out and described above.

          Accordingly, it is intended by the appended claims  
to cover all modifications of the invention which fall  
within the true spirit and scope of the invention.

What is claimed is:

## Claims

1. A method of providing a resource in an electronic network, the method comprising the steps of:  
receiving a signal associated with machine-readable  
10 data read from a network navigation device, the network navigation device having a first human-viewable image associated with the resource;  
identifying the resource based upon the signal; and  
communicating content of the resource.
- 15 2. The method of claim 1 wherein the step of communicating the content of the resource includes displaying an image which corresponds to at least a portion of the first human-viewable image.
- 20 3. The method of claim 1 wherein the network navigation device has a second human-viewable image, the method further comprising the step of communicating, to an end user, an image which corresponds to at least a  
25 portion of the second human-viewable image.
4. The method of claim 3 further comprising the step of modifying the content of the resource to include  
the second human-viewable image.
- 30 5. The method of claim 1 further comprising at least one of the steps of authenticating the network navigation device based upon the signal, monitoring a usage parameter associated with the network navigation  
35 device, and limiting subsequent usage associated with

5 the network navigation device once the usage parameter  
attains a predetermined threshold.

6. A system for communicating content of a  
resource in an electronic network, the system  
10 comprising:

a node which receives a signal associated with  
machine-readable data read from a network navigation  
device having a first human-viewable image associated  
with the resource, the node operative to identify the  
15 resource based upon the signal and to communicate  
content of the resource.

7. The system of claim 6, wherein the node  
includes a server that retrieves the resource from an  
20 electronic address in the electronic network.

8. The system of claim 7 wherein the network  
navigation device includes a second human-viewable  
image, and wherein the server modifies the content of  
25 the resource to include at least a portion of the second  
human-viewable image.

9. The system of claim 7 further comprising a  
database having a plurality of records corresponding to  
30 a plurality of network navigation devices, wherein the  
server is operative to authenticate the network  
navigation device using the database.

10. An article of manufacture comprising:  
35 a computer-readable storage medium; and

5 computer-readable data stored on the computer-  
readable storage medium, the computer-readable data  
operative to direct steps of receiving a signal  
associated with machine-readable data read from a image  
associated with a resource, identifying the resource  
10 based upon the signal, and communicating content of the  
resource.

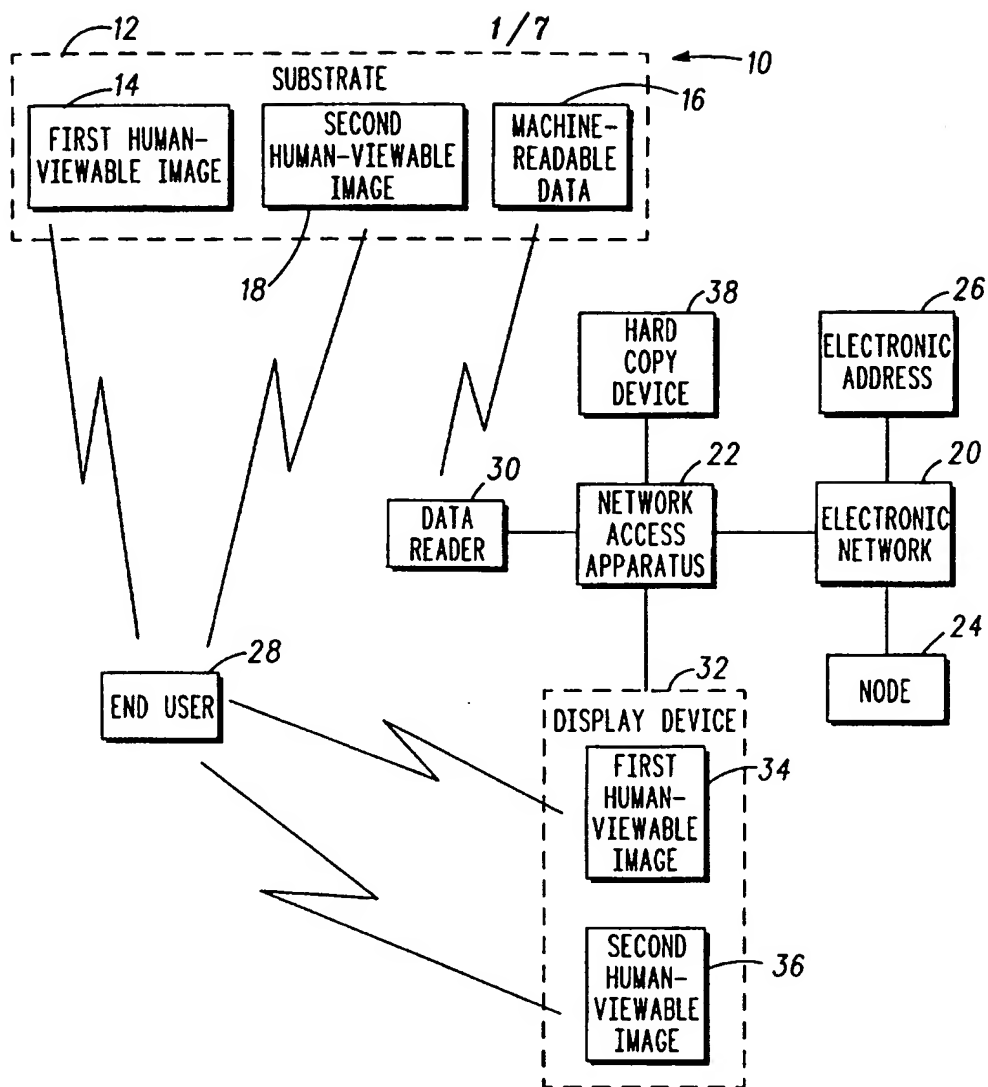


FIG. 1

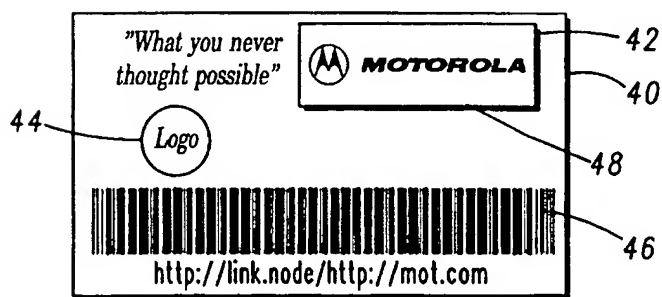


FIG. 2

2/7

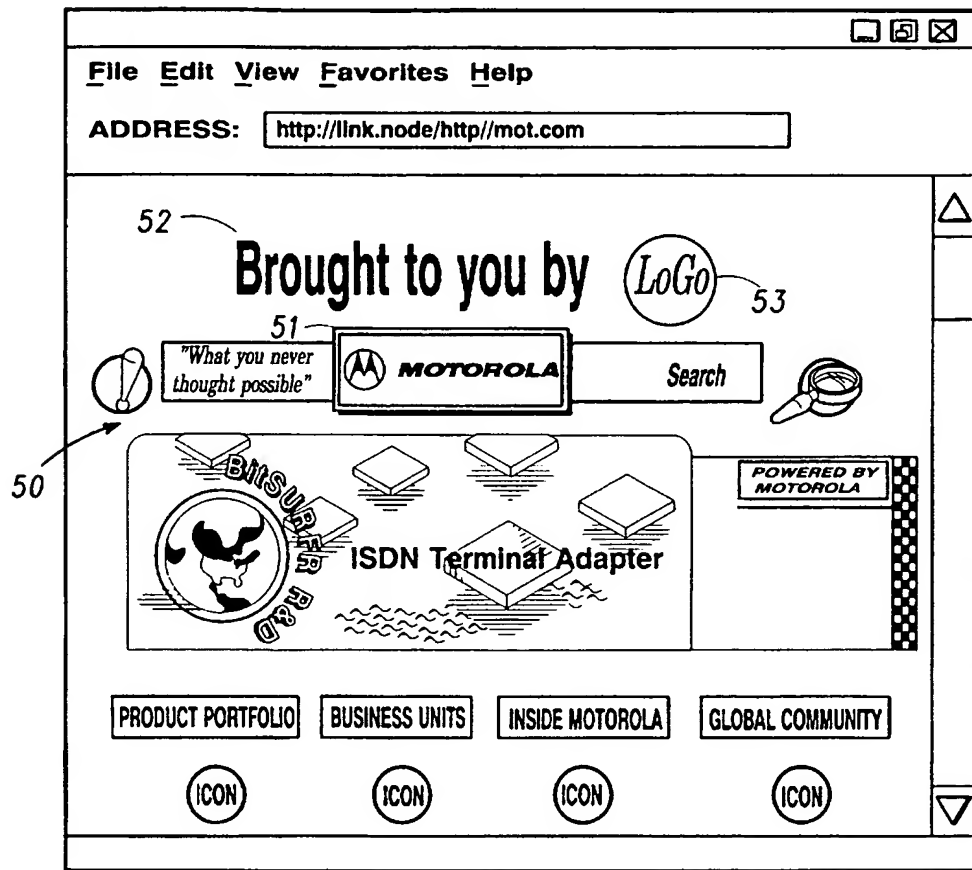


FIG.3



FIG.4



3/7

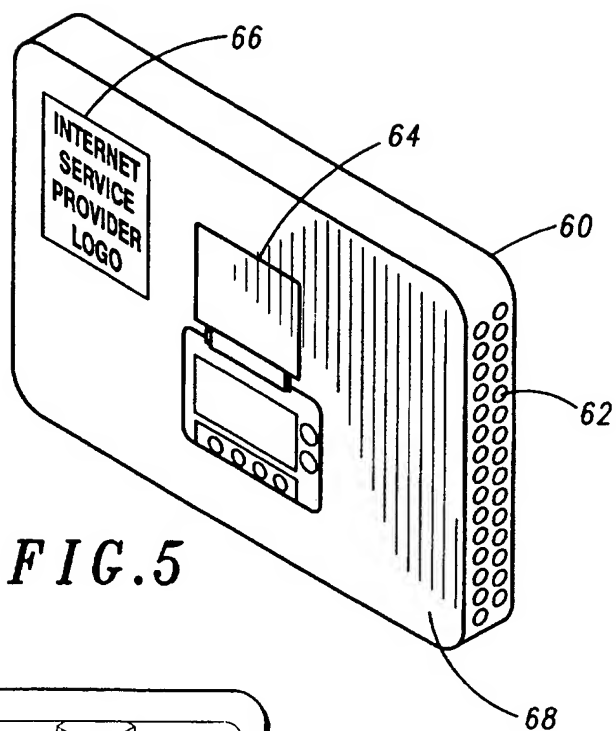


FIG. 5

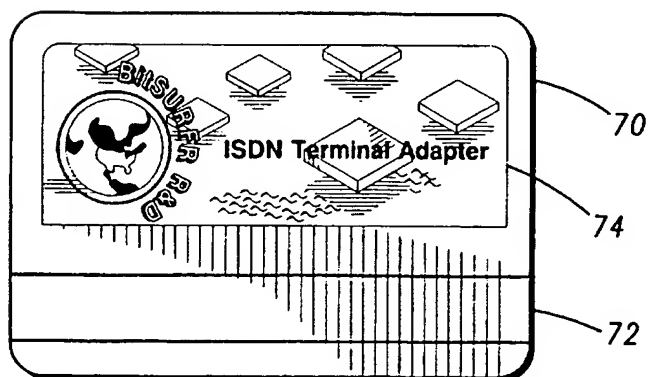


FIG. 6

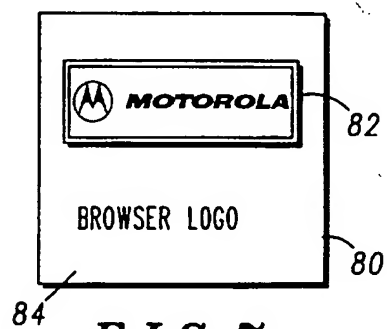
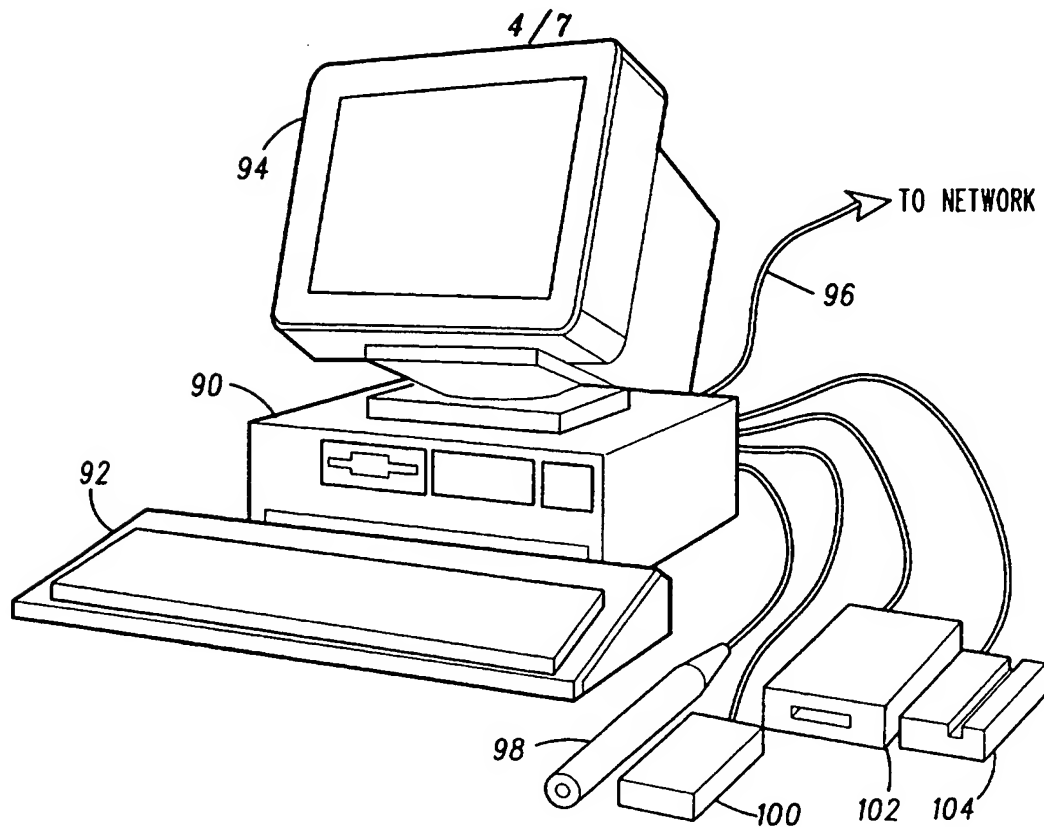
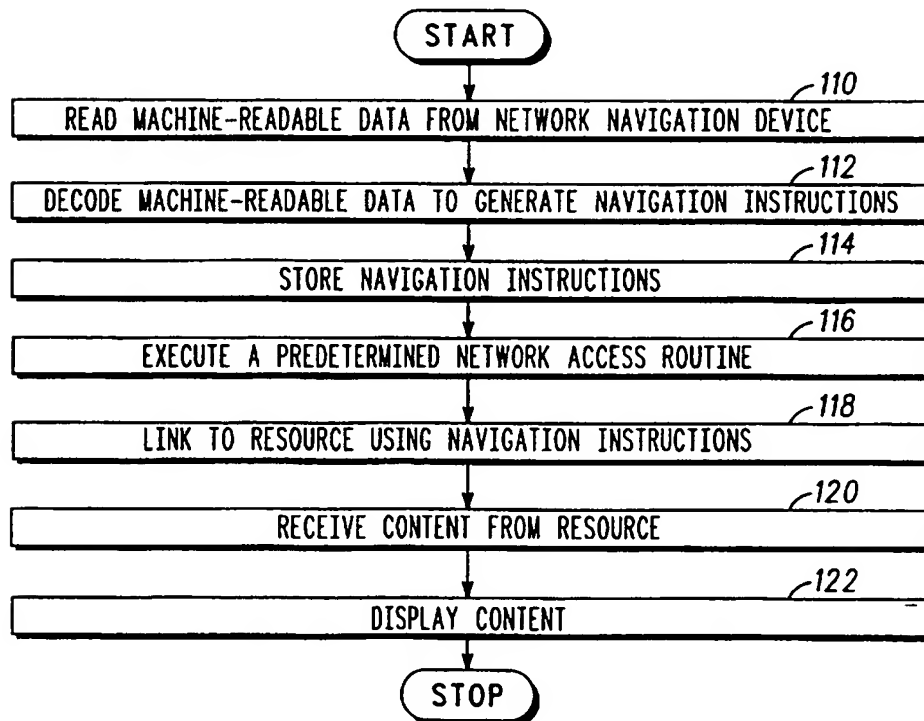


FIG. 7

**FIG. 8****FIG. 9**

5 / 7

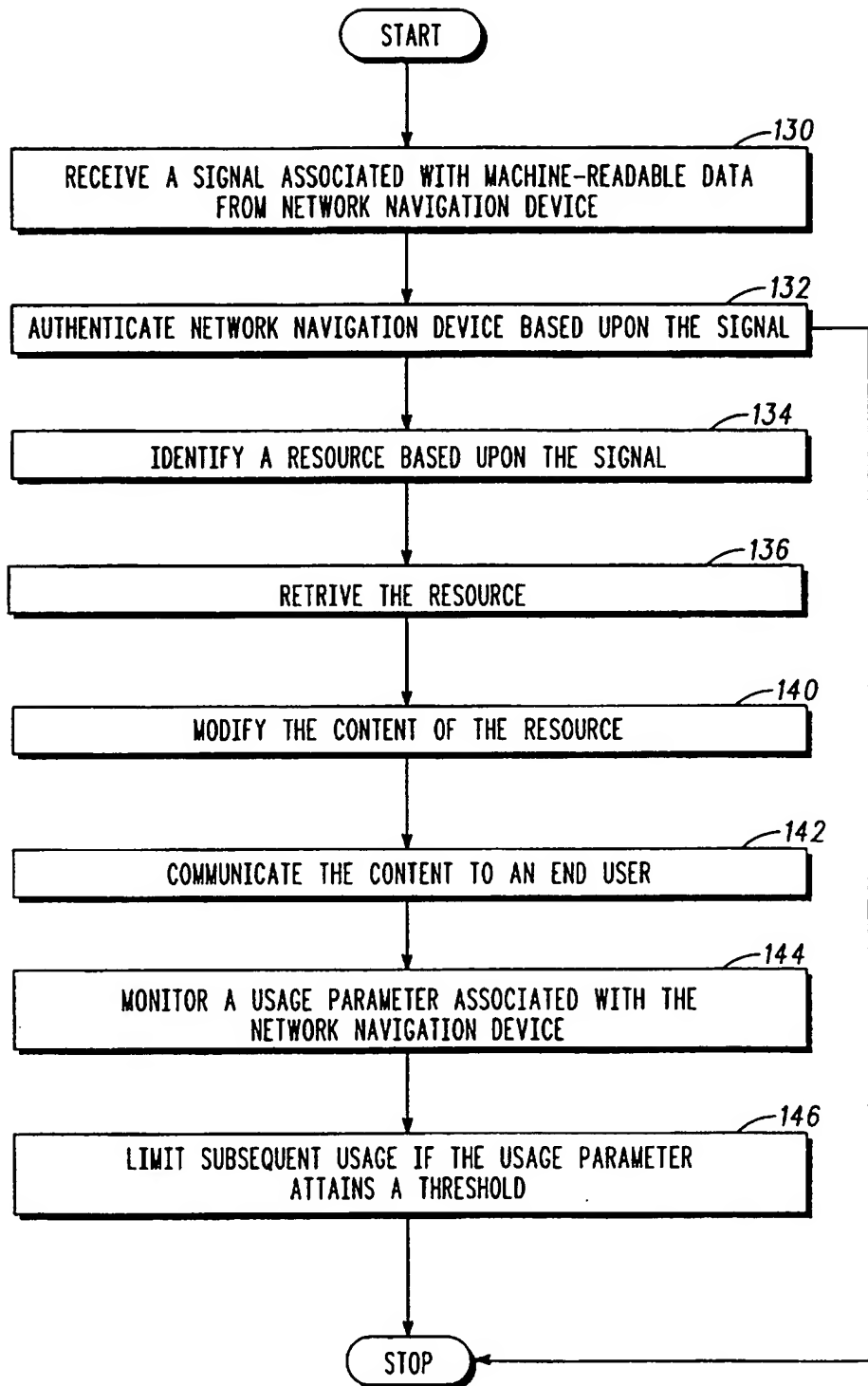


FIG. 10

6/7

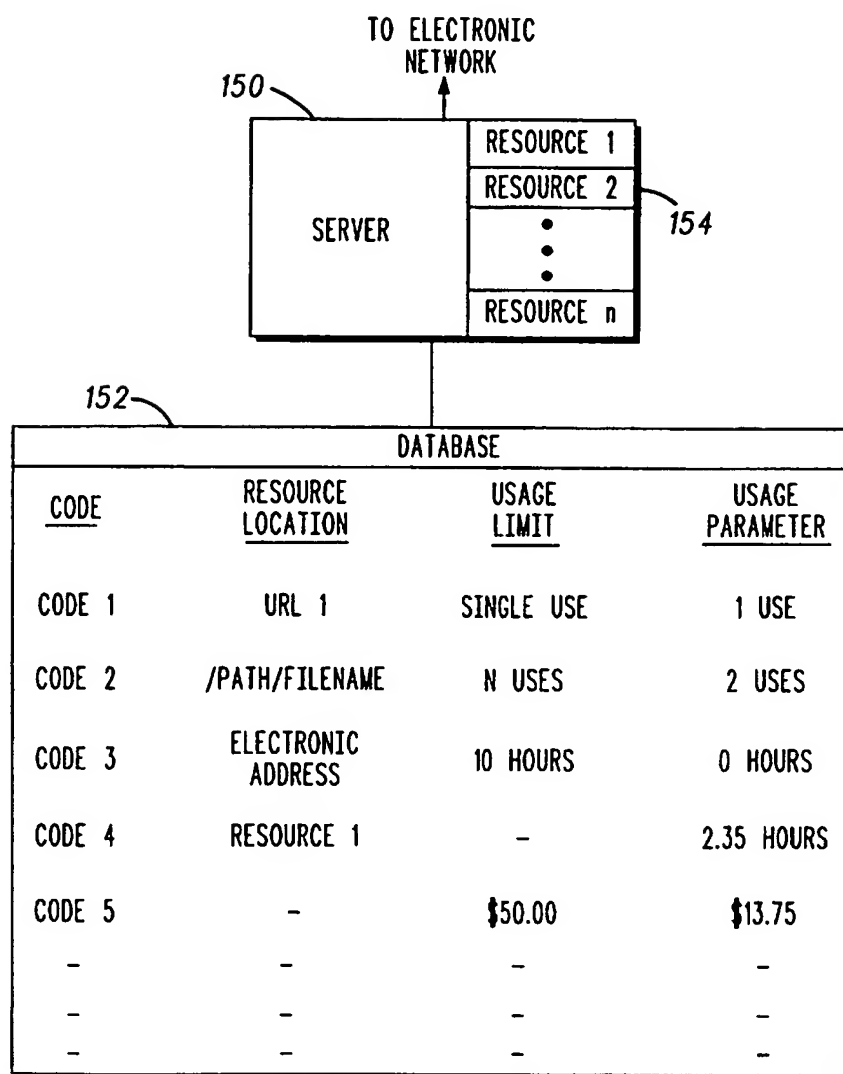
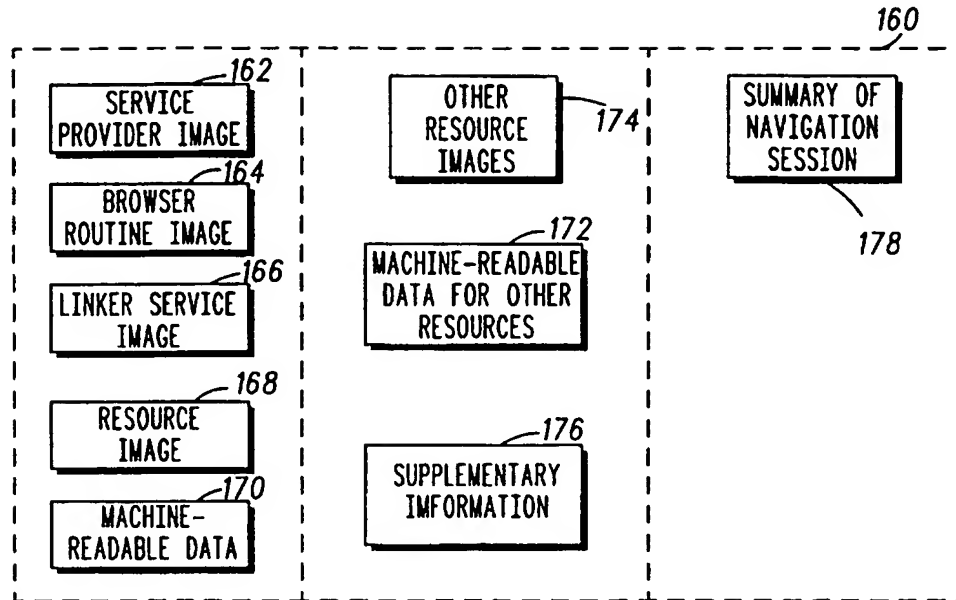
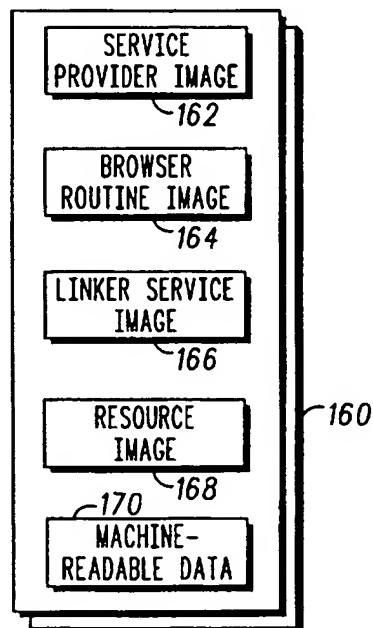


FIG.11

7/7

*FIG. 12**FIG. 13*

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US97/16874

<b>A. CLASSIFICATION OF SUBJECT MATTER</b> IPC(6) :G06F 15/00; H04N 7/173 US CL :Please See Extra Sheet. According to International Patent Classification (IPC) or to both national classification and IPC																								
<b>B. FIELDS SEARCHED</b> Minimum documentation searched (classification system followed by classification symbols) U.S. : Please See Extra Sheet.  Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched none  Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) APS: USPAT, JPOAB, EPO files search terms: internet, web, networks, bar codes browsing																								
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																								
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																						
X,P	US 5,640,193A (WELLNER) 17 JUNE 1997, abstract, col. 3, lines 1-13, col. 4, lines 56-64, figures 1, 2	1-10																						
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.																								
<table border="0"><tr><td>* Special categories of cited documents:</td><td>*T</td><td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td></tr><tr><td>*A</td><td>document defining the general state of the art which is not considered to be of particular relevance</td><td></td></tr><tr><td>*B</td><td>earlier document published on or after the international filing date</td><td>*X</td><td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td></tr><tr><td>*L</td><td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td><td>*Y</td><td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td></tr><tr><td>*O</td><td>document referring to an oral disclosure, use, exhibition or other means</td><td></td><td></td></tr><tr><td>*P</td><td>document published prior to the international filing date but later than the priority date claimed</td><td>*A</td><td>document member of the same patent family</td></tr></table>			* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	*A	document defining the general state of the art which is not considered to be of particular relevance		*B	earlier document published on or after the international filing date	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	*L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	*O	document referring to an oral disclosure, use, exhibition or other means			*P	document published prior to the international filing date but later than the priority date claimed	*A	document member of the same patent family
* Special categories of cited documents:	*T	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																						
*A	document defining the general state of the art which is not considered to be of particular relevance																							
*B	earlier document published on or after the international filing date	*X	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																					
*L	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	*Y	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																					
*O	document referring to an oral disclosure, use, exhibition or other means																							
*P	document published prior to the international filing date but later than the priority date claimed	*A	document member of the same patent family																					
Date of the actual completion of the international search 29 DECEMBER 1997		Date of mailing of the international search report 06 MAR 1998																						
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230		Authorized officer HUYNH-BA Telephone No. (703) 305-9794																						

**INTERNATIONAL SEARCH REPORT**

International application No.  
PCT/US97/16874

**A. CLASSIFICATION OF SUBJECT MATTER:**

US CL :

345/326, 327, 329, 334, 335, 339, 348, 349, 350, 351, 352, 354, 356, 357; 348/7

**B. FIELDS SEARCHED**

Minimum documentation searched

Classification System: U.S.

345/326, 327, 329, 334, 335, 339, 348, 349, 350, 351, 352, 354, 356, 357; 348/7